



MEMORANDUM

GENERAL SUBJECT: SECTION 105 – SAFETY PRECAUTIONS		NUMBER: 245-05
SPECIFIC SUBJECT: SAFETY PRECAUTIONS		DATE: April 4, 2005
DIRECTED TO: District Administrators	SIGNATURE: Andrew Mergenmeier, PE <i>Signature on original copy of memorandum</i>	

This revision reflects the changes within the Department and those that regulate how we monitor, handle, store and transport radioactive materials in the Commonwealth.

Revise Materials Division Manual of Instructions, Section 105 by deleting all of the existing and replacing with the paragraphs below.

SECTION 105 - SAFETY PRECAUTIONS

Personnel of the Materials Division are to follow rules of safety. A copy of the safety rules of the Department is given to each employee. The safety rules must be read, understood, and implemented at every level in the organization for those employees that are exposed to radioactive sources, it is critical that they follow all safety rules to comply with the terms and condition set forth by the United States Nuclear Regulatory Commission.

Sec. 105.01 Departmental Employees Visiting Plants

When employees visit plants to perform source inspection or monitor Quality Assurance operations, they are to comply with the safety rules applicable to that plant.

Sec. 105.02 Nuclear Safety Precautions

It is the intent of the Department as a Radioactive Materials Licensee to develop, document, and implement a Radiation Protection Program to commensurate licensed activities of the Department and to ensure compliance with all the provisions of the Code of Federal Regulations (CFR). The procedures and principles to achieve occupational exposure to employees and the general public will be monitored to assure exposure levels to be maintained as low as reasonably

achievable (ALARA). Employees will be monitored using a personal dosimetry device (badge). Gauges will be monitored using leak wipe testing and survey meters.

In order to minimize the radiation exposure to employees and the general public while storing, operating and/or transporting the gauges, the Department follows the guidelines of the United States Nuclear Regulatory Commission (USNRC) and United States Department of Transportation (USDOT) stringently.

All job advertisements for such positions where employees will be operating or working in the vicinity of the nuclear gauges will contain a statement in the position description stating "May be required to operate or work in the vicinity of devices containing radioactive materials and emitting low levels of ionizing radiation." The Human Resources Division coordinates this. All interviewees and new employees in these positions will be given a Radiation Information Packet to review. The packet containing the information concerning the health risks from occupational exposure while in the vicinity of / or working with radioactive materials will be explained during the interview process. Once explained and understood by the new employee, a form (HPS 901F) will be signed certifying they have received and understand the information pertaining to the possible health risks relating to occupational exposure from radioactive materials. This form will be maintained in the employee's personnel file.

The procedures stated in the Virginia Department of Transportation's Guide-Exposure of Females to Radiation should be adhered to as outlined. Therefore, the Department places no special limitations restricting women of childbearing age that could result in job discrimination. The Department takes the position that special protection of the embryo/fetus should be voluntary and should be based on the joint decisions made by the declared pregnant woman and the employer who are well informed about the possible health risks involved. Employee and employer should work together to decide the best method for accomplishing this goal once the pregnancy has been declared. Once the pregnancy has been declared a document (Declaration of Pregnancy) will be signed certifying that the employee has received and understands the health risks of being exposed to radiation. The signed document shall be maintained in the employee's personnel file with a copy forwarded to the Central Office Materials Division, Attention: VDOT Radiation Safety Officer.

Employees will only be allowed to store, operate and/or transport, a nuclear gauge, containing radioactive materials, once they have received the proper training required by the USNRC, the Department and has been issued a badge to monitor the occupational exposure emitted from the gauge. The Materials Division or an accredited representative will conduct this training. Successful completion of the safety course will be acknowledged by the Department by issuing a certificate card that is valid for 3 years and personal dosimetry to monitor occupational exposure. Once hired the employee will be required to sign a statement indicating that the employee will follow proper procedures set forth by Department policy, and that if not followed, they may be subject to disciplinary action under the Standards of Conduct Act. The Department does not allow an employee less than 18 years of age, regardless of sex, to store, operate and/or transport a nuclear gauge.

All employees assigned to any position requiring them to store, operate and/or transport the Department's nuclear gauges will be expected to perform their job duty requirements. If a valid

medical reason is diagnosed by a physician that would prevent accomplishment of their job duties involving nuclear gauges, such information should be submitted to the Department and upon review, it may be deemed acceptable to modify the job duties of that individual.

The requirements for operation, storage and/or transportation for portable gauges are found in CFR10 and CFR49. The storage facility requirements are located in the Road and Bridge Standards, section 605.01.

Sec. 105.03 Nuclear Moisture-Density Gauges – General Administration

The Department's portable nuclear gauges are regulated and inventoried by the Central Office Materials Division Radiation Safety Officer (ELKO RSO) only. At no time shall the gauges be placed on any of the districts major equipment inventory lists. Gauges are assigned to districts as requested by the District Radiation Safety Officer, (RSO). The District RSO signs a Nuclear Gauge Receipt of Transfer (TL-122) and assumes responsibility for the safe keeping of the gauge. Thereafter, that gauge(s) is assigned to a project(s) after an on-site inspection has been conducted to assure that the storage/ office areas meet the standards of the USNRC and the Department. Once the inspection is completed, the responsible representative for the project signs the TL-122 and assumes the responsibility for the gauge. The District RSO faxes a copy of the TL-122 to the ELKO RSO. When the gauge is no longer needed on the project, the District RSO receives the gauge from the project, signs the TL-122, and assumes responsibility for the gauge. The District RSO faxes a copy of the TL-122 to the ELKO RSO. When calibration, repair, or replacement of the gauge is required, the District RSO transports the gauge to the ELKO RSO, who signs a TL-122 and assumes responsibility for the gauge. For each TL-122 received or issued, the ELKO RSO updates the Nuclear Gauge Master List.

To ensure compliance with the USNRC and the Department's Radioactive Materials License, (NRC FORM 374), every 6 months a physical inventory of all gauges is performed. These inspections include such tasks as leak-wipe tests, review of gauge storage facilities, badge storage facilities, transport logs,(when applicable) handling techniques, and the use of the gauge. Leak-wipe tests assure that the source(radioactive materials) remains sealed in the gauge and do not have any loose contamination possibilities. Any source which is found to be leaking over .005 microcuries of removable material must be immediately taken out of service for repair or disposal. The results of the inspections are recorded on TL-61, Evaluation of Safety Procedures Checklist. If any discrepancies or violations are noted, a TL61 will be completed and the deficiency or violation will be corrected immediately. A follow-up inspection must be conducted within seven business days from the initial time of inspection.

On a quarterly basis, the District Nuclear Technicians (RSO) will exchange all badges in their respective district. If any discrepancies or violations are noted, a TL61 will be completed and the deficiency or violation will be corrected immediately. A follow-up inspection must be conducted within seven business days from the initial time of inspection.

Failure to correct the discrepancy or violation will result in the removal of the gauge, an informal hearing conducted with the party who assumed the responsibility for the safe keeping of the gauge (signed the TL-122) and may result in disciplinary actions against the party under the Standards of Conduct Act. Violations revealed through a USNRC inspection may result in

heavy fines or revocation of the Department's Radioactive Materials License and depending on the severity of the violation, could result in dismissal of the responsible party.

The Evaluation of Safety Procedures checklist, (TL-61) is to be completed every six months for each gauge and distributed as follows; Central Office Materials Division, Attention: Radiation Safety Officer and District Materials Engineer.

Sec. 105.04 Nuclear Moisture-Density Gauges – Operating and Emergency Precautions

It is intended for the gauges to be used on as many projects as possible if the projects are located within a reasonable distance of each other. It will be the discretion of the District Materials Engineer to determine if more gauges are needed to fulfill the needs of the projects. This provides a more productive use of each gauge. There will be occasions, which due to supply and demand will limit the amount of gauges throughout the state. Therefore, it will not be possible for every project to have a gauge assigned to it. If this applies, make arrangements with your District Materials Engineer to use a gauge from a Residency or project nearest you.

The Radiation Safety Officer in the Central Office Materials Division should be notified in writing (TL-122) of the projects on which each gauge is to be used or assigned too. The United States Nuclear Regulatory Commission incorporated into its regulations the United States Department of Transportation's regulations contained in 49 CFR 170-189. These regulations now comprise 10 CFR 71.

These guidelines apply to the Department each time a gauge is transported on public streets and highways. This is regardless of the nuclear gauge user / transporter. The rules of CFR 10 and CFR 49 apply anytime a nuclear gauge is transported by a motor vehicle. Before transporting, make sure that the nuclear gauge is properly secured in the vehicle and locked to prevent unauthorized entry. Also, the shipping papers ("Bill of Lading") must be within reach of the operator. Inspect the Packaging (carrying case) for defective parts or defaced labels and always wear your Thermoluminescent Dosimeter (TLD) badge, because the operator is held responsible at all times to assure that all of the regulations are followed. If the gauge is to be left unattended in the vehicle during normal work hours at any time make sure the gauge is secured, and the keys are not left in the vehicle to minimize the possibility of theft. Unless approved by the Materials Division no nuclear gauge will ever be left anywhere other than its assigned storage unit. It is mandatory that the gauge be returned and secured to its assigned storage area when not in use.

Storage of the nuclear gauge(s) must be provided away from the immediate workstation. The storage area will conform to the Road & Bridge Standards, section 605.01 or by the approval from the Materials Division. Gauges stored where personnel are working should be at least 10 feet from the work area or provide adequate shielding to minimize the radiation levels to 2 mr/hr or less.

All personnel responsible for, or using nuclear gauges shall become knowledgeable and disciplined in avoiding incidents that may cause damage or theft of the nuclear gauge.

A damaged gauge can cause serious injury to personnel depending upon the exposure time and the distance from the radioactive materials. In case of accident, theft, or fire involving a nuclear gauge promptly refer to the Department's Radiation Safety Training Manual, which contains an itemized emergency procedure to be followed in each respective case.

In the event of such an emergency, all requests for public information related thereto should be directed to the Office of Community and Public Relations. This will relieve Residency personnel of this burden and will establish statewide uniformity in information release.

Simultaneously, the information to be released will be assembled and forwarded to the Community and Public Relations Manager by our Virginia Department of Transportation Radiation Safety Officer, from the initial reports of the incidents received. It is important that the initial details of the incident be telephoned or emailed to the District or State Radiation Safety Officer as soon as they are identified, so the information released is concise and comprehensible to the public.

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Commissioner
Chief Engineer
Division Administrators
Resident Administrators
District Materials Engineers
District Construction Engineers
District Maintenance Engineers
American Concrete Paving Association
NE Chapter, Southern Region

Federal Highway Administration
Precast Concrete Association of Virginia
Virginia Asphalt Association
Virginia Dept. of Minority Business Enterprise
Virginia Ready-Mix Concrete Association
Virginia Transportation Construction Alliance